

# BULLION BECK HEADFRAME FIRE DAMAGE MITIGATION

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The Utah Abandoned Mine Reclamation (AMR) Program is the agency responsible for reclaiming abandoned mines in Utah under the Surface Mining Control and Reclamation Act of 1977 (SMCRA, P.L. 95-87). It is almost axiomatic that abandoned mines date from the historic era, and many abandoned mines were significant in the development of the state. SMCRA's goals of eliminating safety hazards and environmental problems sometimes are at odds with the preservation goals of the Historic Preservation Act. The Bullion Beck headframe fire incident shows that the needs of both acts can be met. The Bullion Beck headframe is a National Register site that was inadvertently damaged during a reclamation project. This report will show how a severe, but unanticipated, adverse effect was mitigated.

The Bullion Beck headframe is located in Eureka, Utah, about fifty miles southwest of Salt Lake City. Eureka is one of several hardrock mining boom towns that sprang up in the Tintic Mountains in the late 1800s. It still survives today with a population of 700.

The Bullion Beck and Champion Mining Company was started by John Beck, a German immigrant who started mining in Utah in 1870. After several failures he struck valuable ore and became very wealthy. The mine went through a major capital development phase in 1890, when a structure housing the shaft, headframe, hoist, boilers, and shops was built. The mine declined during World War I, and in 1925 the exterior structure was torn down for salvage, leaving the exposed headframe. The mine was revived in 1940 under new ownership, using the original headframe and a new hoist. It continued to operate until 1960.

The Bullion Beck headframe is an A-type (also known as a 2-post or Montana) headframe constructed in 1890 of massive wooden timbers. It is 67 feet by 32 feet by 56 feet high. It stands over a shaft 1200-1500 feet deep. The shaft has two four-foot square compartments for skips and a smaller manway. Three vertical timbers extend from the top of the headframe down into the shaft to quide the skips as they travel. Significant to the story, but not apparent to observers or from photographs, is the below-ground structure. The primary support for the headframe is not concrete footers, but wooden beams and cribbing buried in the fill around the shaft. The headframe was listed on the National Register of Historic Places in 1976, along with the three other headframes remaining in Eureka. The Utah State Historical Society erected a commemorative marker on the site and put chain link fencing around the shaft.

The condition of the headframe steadily deteriorated after its abandonment. Two platforms, one where ore was dumped from the skips and one by the sheave wheels, fell and hung swinging in the breeze. The unconsolidated material around the shaft collar sloughed outside the wooden sheathing supporting the sides of the shaft. The sloughing extended past the fencing placed by the historical society, so that it was possible to stand outside the fence and fall into the shaft.

These conditions led the AMR program to include the Bullion Beck headframe in a 1985 project to address hazards at 24 shafts and two adits in the town of Eureka. Most of the mine openings were backfilled; four shafts, including the Bullion Beck, were to be closed with a steel grate. The grate is made of 1/4-inch steel rod woven like a chain link fence held by I-beam supports and soil anchors. The plan was to work around the skip guides and to move the wood in the shaft only to the extent necessary to install the grate. After getting the necessary approvals and putting precautionary language in the construction specifications, the project was bid and work began in the fall of 1985.

The project proceeded well until late March 1986, when the contractor moved onto the Bullion Beck site. Working ahead of schedule and without AMR program supervision (both in breach of the contract), the contractor broke the skip guides and other wooden structural members with a backhoe. These fell into the shaft and lodged on square sets in the shaft. Unable to remove them, he burned them. The wooden collar and the buried wooden supporting members were damaged and the parts that had fallen into the

shaft were destroyed. Fortunately, the aboveground structure was not damaged by the fire. However, the upper parts of the skip guides were left dangling with ragged ends.

In response to the incident, the AMR program met and worked with the State Historic Preservation Office, the Tintic Historic Society (representing the Certified Local Government), the U.S. Office of Surface Mining, and the Advisory Council on Historic Preservation to see what could be done to mitigate the damage. An engineering study determined that the loss of the collar could lead to continued sloughing of the shaft and ultimately the structural failure of the headframe. With this in mind a four-part mitigation plan was developed:

- \* Collar stabilization to prevent further sloughing
- \* Stabilization of the broken skip guides to prevent them from falling
- \* HAER documentation of the headframe
- \* Public interpretation to put the headframe into the context of the overall mine operation and the Bullion Beck mine into the context of mining in Utah.

The public interpretation would take the form of a monument with an interpretive plaque at the headframe and an interpretive pamphlet for distribution at the Tintic Museum in Eureka.



Bullion Beck headframe, Eureka, Utah. (Built 1890, photo taken in 1977). Photo courtesy of J. Chris Rohrer.

The HAER documentation and collar stabilization were completed in the fall of 1986. To stabilize the collar, the shaft was cleared and a reinforced concrete slab floor was cast twenty feet down the shaft. Reinforced concrete walls were then cast to support the sides of the shaft. The excavation outside the walls was then backfilled. Timber sets and lagging were placed over the concrete walls to recreate the original shaft appearance. A steel safety grid over the opening prevents anyone from falling in but permits viewing down the shaft. In the summer of 1987 the broken skip guides were spliced with matching timbers and extended to ground level. A stone monument with interpretive plaque was built at the same time. The interpretive pamphlet has been written and will soon be printed.